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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/604,687	08/11/2003	Kun-chih Lin	ADTP0067USA	1686
27765	7590	11/16/2005	EXAMINER	
NORTH AMERICA INTELLECTUAL PROPERTY CORPORATION P.O. BOX 506 MERRIFIELD, VA 22116			GUERRERO, MARIA F	
			ART UNIT	PAPER NUMBER
			2822	

DATE MAILED: 11/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/604,687

Applicant(s)

LIN, KUN-CHIH

Examiner

Maria Guerrero

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 06 September 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7, 10-18, 21-26 is/are rejected.
- 7) ☒ Claim(s) 8,9,19 and 20 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. This Office Action is in response to the amendment filed August 26, 2005.

#### **Status of Claims**

2. Claims 1-26 are pending.

#### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-2, 6, 7, 10 and 23-24 are rejected under 35 U.S.C. 102(b) as being anticipated by Zhang et al. (US 5,648,662).
4. Zhang et al. shows providing a substrate (having a buffer layer) defined with a first region and a second region (Fig. 1(a), col. 7, lines 1-25, col. 10, lines 1-10). Zhang et al. discloses forming an amorphous silicon film on the substrate, forming a mask layer (multi-layer structure, metal layer) on the amorphous silicon film, performing a first photo-etching process to remove the mask layer on the first region (Fig. 1(a)-1(b), col. 2, lines 30-64, col. 5, lines 50-65).
5. In addition, Zhang et al. teaches forming a heat-retaining capping layer (silicon oxide) covering the mask layer in the second region and the amorphous silicon film in the first region (Fig. 1(a), col. 2, lines 30-67, col. 3, lines 1-50). Zhang et al. describes performing the excimer laser crystallization process to make the amorphous silicon film

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covered by the heat-retaining capping layer in the first region crystallize to a polysilicon film (Abstract, Fig. 1(a)-1(b), col. 2, lines 30-65, col. 3, lines 1-50).

6. Claims 12-13, 16, 18, 21, 25-26 are rejected under 35 U.S.C. 102(b) as being anticipated by Yamazaki et al. (US 5,365,080).

Yamazaki et al. shows providing a substrate defined with a first region and a second region (Fig. 4A-4F, col. 3, lines 53-57). Yamazaki et al. discloses forming an amorphous silicon film on the substrate, forming a heat-retaining capping layer covering the amorphous silicon film on the first and the second regions (Fig. 4A-4F, col. 3, lines 53-57, col. 4, lines 1-65). Yamazaki et al. describes forming a mask layer on the heat-retaining capping layer Fig. 4C-4E, col. 4, lines 1-30).

Furthermore, Yamazaki et al. shows performing a first photo-etching process to remove the mask layer in the first region and expose the heat-retaining capping layer (Fig. 4C, col. 4, lines 5-14). Yamazaki et al. describes performing the excimer laser crystallization process to make the amorphous silicon film covered by the heat-retaining capping layer in the first region crystallize to a polysilicon film (col. 4, lines 24-30, 62-65, col. 6, lines 1-7).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-7 and 12-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harkin et al. (U.S. 5,705,413).

Harkin et al. teaches a method of forming a polysilicon film by an excimer laser crystallization process (Abstract). Harkin et al. shows providing a substrate (having a buffer layer) defined with a first region and a second region (Fig. 1-2, col. 7, lines 1-25, col. 10, lines 1-10). Harkin et al. discloses forming an amorphous silicon film on the substrate, forming a mask layer on the amorphous silicon film, performing a first photo-etching process to remove the mask layer on the first region (Fig. 3-5, 13-14, col. 5, lines 50-65 col. 6, lines 1-20, col. 7, lines 24-67, col. 12, lines 49-67, col. 13, lines 1-17). Harkin et al. teaches forming a heat-retaining capping layer covering the mask layer and the amorphous silicon film (Fig. 3-5, col. 7, lines 40-67).

Furthermore, Harkin et al. shows performing the excimer laser crystallization process to make the amorphous silicon film in the first region crystallize to a polysilicon film (Fig. 5, col. 6, lines 1-20, col. 8, lines 9-25). Harkin et al. discloses an etching process to remove the heat-retaining layer, the mask layer, and to etch the portions of the amorphous film after forming the polysilicon film (Fig. 13-14, col. 4, lines 24-35, col.

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9, lines 40-45, col. 13, lines 1-17). Harkin et al. teaches the mask layer and the heat-retaining capping layer comprising silicon oxide, silicon nitride, silicon oxynitride or a metal (col. 3, lines 47-50, 63-67, col. 4, lines 1-4).

8. In addition, Harkin et al. describes the masking pattern (20,21) having a thermally-stable absorbent layer or reflective inorganic material and an insulating layer having sufficient thickness to mask the amorphous film. Therefore, Harkin et al. shows forming a heat-retaining capping layer covering the mask and forming a mask layer on the heat-retaining capping layer (Abstract, col. 2, lines 58-67, col. 3, lines 1-5, col. 3, lines 25-67, col. 4, lines 1-24).

9. Harkin et al. also discloses optional portions of the mask or the heat-retaining capping layer layer are covering areas not covered by the first and second portions of the amorphous layer during the energy beam exposure (Fig. 5, col. 9, lines 10-22). Harkin et al. describes the energy beam exposure may be carried out on a continuous semiconductor film 1 (amorphous) with masking pattern 20,21 and may be separated by etching after the energy beam exposure step (col.13, lines 12-17).

10. Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to recognize that part of the layer being crystallized was covered with the heat-retaining capping layer in Harkin et al. reference because Harkin et al. suggested that small-area components of different crystallinity would be formed (Abstract).

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11. Claims 10-11 and 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harkin et al. (U.S. 5,705,413) in view of Kawasaki et al. (U.S. 6,426,245).

12. Regarding claims 10-11 and 21-22, Harkin et al. does not specifically show the long duration laser having a period in a range of about 150 to 250 ns. However, Kawasaki et al. teaches the excimer laser having a period from several nanoseconds through several hundred nanoseconds (col. 4, lines 58-67).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to specify any desired period on Harkin et al. reference as taught by Kawasaki et al. in order to optimize the laser conditions and better control the crystallizing growth (Kawasaki et al., col. 4, lines 58-67).

In addition, it is the examiner's position that the period in a range of about 150 to 250 ns it is not critical to the invention. Therefore, "where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

***Terminal Disclaimer***

13. The terminal disclaimer filed on August 26, 2005 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of US Application No. 10/604,485 has been reviewed and is accepted. The terminal disclaimer has been recorded.

***Allowable Subject Matter***

14. Claims 8-9 and 19-20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Response to Arguments***

15. Applicant's arguments filed August 26, 2005 have been fully considered but they are not persuasive. Claims 1-7, 10-18 and 21-26 stand rejected.

Applicant argued that Zhang et al. do not disclose the heat-retaining capping layer. However, a person of ordinary skill in the art would recognize that the silicon oxide capping layer disclosed by Zhang et al. is capable of performing the function of heat-retaining because is one of the materials claimed with this purpose (see claim 7).

Applicant argued that Zhang et al. do not disclose removing the amorphous silicon film in the second region and leave the polysilicon film in the first region. However, the claims rejected in view of Zhang et al. do not recite these limitations.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., forming the amorphous film **completely** on the substrate, utilizing the mask to define the crystallization region, without etching the amorphous silicon film) are not recited in the rejected claim(s). Although the claims are interpreted in light of the



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specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Applicant argued that Yamazaki et al. (US 5,365,080) and Harkin et al. (U.S. 5,705,413) do not disclose the heat-retaining capping layer. Applicant argued that the heat-retaining capping layer is not **use** to reduce a heat dissipation rate, maintain the amorphous silicon in the first region in a higher temperature. However, a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963). It is the examiner position that the cited references are capable of performing the intended use.

In addition, Joo et al. (US 6,197,623) is presented as evidence to show that the silicon oxide is in fact recognize in the art as a heat-retaining layer (see Joo et al., Fig. 8, col. 8, lines 20-30).

Furthermore, "the use of patents as references is not limited to what the patentees describe as their own inventions or to the problems with which they are concerned. They are part of the literature of the art, relevant for all they contain." In *re Heck*, 699 F.2d 1331, 1332-33, 216 USPQ 1038, 1039 (Fed. Cir. 1983) (quoting *In re Lemelson*, 397 F.2d 1006, 1009, 158 USPQ 275, 277 (CCPA 1968)). A reference may

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be relied upon for all that it would have reasonably suggested to one having ordinary skill the art, including nonpreferred embodiments. *Merck & Co. v. Biocraft Laboratories*, 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), cert. denied, 493 U.S. 975 (1989). See also *Celeritas Technologies Ltd. v. Rockwell International Corp.*, 150 F.3d 1354, 1361, 47 USPQ2d 1516, 1522-23 (Fed. Cir.1998). Disclosed examples and preferred embodiments do not constitute a teaching away from a broader disclosure or nonpreferred embodiments. *In re Susi*, 440 F.2d 442, 169 USPQ423 (CCPA 1971).

In addition, during patent examination, the pending claims must be "given \*>their< broadest reasonable interpretation consistent with the specification." > In *re Hyatt*, 211 F.3d 1367, 1372, 54 USPQ2d 1664, 1667 (Fed. Cir. 2000). While the claims of issued patents are interpreted in light of the specification, prosecution history, prior art and other claims, this is not the mode of claim interpretation to be applied during examination. During examination, the claims must be interpreted as broadly as their terms reasonably allow. > In *re American Academy of Science Tech Center*, F.3d, 2004 WL 1067528 (Fed. Cir. May 13, 2004)(The USPTO uses a different standard for construing claims than that used by district courts; during examination the USPTO must give claims their broadest reasonable interpretation.) < This means that the words of the claim must be given their plain meaning unless applicant has provided a clear definition in the specification. In *re Zletz*, 893 F.2d 319, 321, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989) >; *Chef America, Inc. v. Lamb-Weston, Inc.*, 358 F.3d 1371, 1372, 69 USPQ2d 1857 (Fed. Cir. 2004). Therefore, the term "heat-retaining capping layer" have been

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given their plain meaning because there is not evidence of any special definition in the specification.

Furthermore, the transitional term "comprising", which is synonymous with "including," "containing," or "characterized by," is inclusive or open-ended and does not exclude additional, unrecited elements or method steps. See, e.g., > Invitrogen Corp. v. Biocrest Mfg., L.P., 327 F.3d 1364, 1368, 66 USPQ2d 1631, 1634 (Fed. Cir. 2003) ("The transition comprising' in a method claim indicates that the claim is open-ended and allows for additional steps."); < Genentech, Inc. v. Chiron Corp., 112 F.3d 495, 501, 42 USPQ2d 1608, 1613 (Fed. Cir. 1997) ("Comprising" is a term of art used in claim language which means that the named elements are essential, but other elements may be added and still form a construct within the scope of the claim.); Moleculon Research Corp. v. CBS, Inc., 793 F.2d 1261, 229 USPQ 805 (Fed. Cir. 1986); In re Baxter, 656 F.2d 679, 686, 210 USPQ 795, 803 (CCPA 1981); Ex parte Davis, 80 USPQ 448, 450 (Bd. App. 1948) ("comprising" leaves "the claim open for the inclusion of unspecified ingredients even in major amounts").

### ***Conclusion***

16. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

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mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Maria Guerrero whose telephone number is 571-272-1837.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amir Zarabian can be reached on 571-272-1852. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

November 4, 2005

  
MARIA F. GUERRERO  
PRIMARY EXAMINER